1	SECTION I-1
2	CLOSURE PLAN
3	[6 CCR 1007-3 § 100.41(a)(13) and § 264.112]
4	
5	I-1a Introduction
6	
7	This Closure Plan describes the strategy to perform temporary closeout and Resource Conservation and
8	Recovery Act (RCRA) closure of the Explosive Destruction System (EDS) unit(s) and Container Storage
9	Unit (CSU) that will be located at the Pueblo Chemical Agent-Destruction Pilot Plant (PCAPP) EDS site.
10	This plan also presents methods to identify contaminated equipment; decontaminate contaminated
11	equipment; dispose of all wastes and contaminated materials; perform verification sampling to confirm
12	successful decontamination; and certify RCRA closure of the EDS units and the CSU.
13	
14	I-1b General Description
15	
16	Two EDS units and one CSU will be located at the PCAPP EDS site. Figure I-1-1 ¹ presents the general
17	layout of the PCAPP EDS site. Each EDS unit will be operated in an Environmental Enclosure as shown
18	in Figure I-1-2 . The CSU is depicted in Figure I-1-3 .
19	
20	The EDS units will be deployed to treat/destroy overpacked munitions, Department of Transportation
21	(DOT) cylinders, and other miscellaneous items (ignition cartridges, propellant) currently stored at PCD
22	that contain mustard agents (distilled sulfur mustard [HD]/mustard-T mixture [HT]), as well as to
23	treat/destroy any reject chemical agent munitions or contaminated bursters generated from PCAPP
24	operations.
25	
26	The CSU is an existing earth-covered concrete storage igloo specifically designed to store energetic
27	munitions; it will be used to store items pending treatment in an EDS unit.
28	
29	Descriptions of the CSU and EDS units are detailed in Section D-1 and D-11, respectively.

I-1-1

All figures are located at the end of this section.

Date: October 2013 Revision No. 0

I-1c Closure Strategy

1

- 3 This section describes the process for performing a temporary closeout and a RCRA closure at the
- 4 PCAPP EDS site. Prior to initiating temporary closeout or RCRA closure, procedures dealing with
- 5 servicing, cleaning, and preparing EDS equipment for departure will have been conducted; and headspace
- 6 monitoring and/or rinsate results (as applicable) recorded; reagent supply containers and reagent transfer
- 7 pumps disconnected; all EDS process and cleaning wastes will have been collected, containerized, and
- 8 removed from the Environmental Enclosures.

9

- All wastes stored in the CSU pending treatment in an EDS and those wastes generated from the EDS
- treatment operations will have been removed from the PCAPP EDS site. On completing a temporary
- 12 closeout or RCRA closure activities, no hazardous waste residues will remain within any hazardous waste
- management unit and associated equipment or in the Environmental Enclosures.

1415

I-1c(1) Temporary Closeout

16

- 17 The EDS units and CSU will be operated intermittently at Pueblo Chemical Depot (PCD). As such, there
- will be periods when EDS treatment and CSU storage operations may temporarily cease at PCD;
- 19 however, the absence of operations does not mean that closure is imminent. Between periods of
- 20 operation, the EDS units and the CSU will undergo a "temporary closeout." The temporary closeout will
- 21 follow established EDS Standing Operating Procedures and decontamination/cleaning procedures for the
- 22 CSU, as necessary, that ensure removal of any residual chemicals from the hazardous waste management
- 23 units and that the units can be reused. It is anticipated that during a temporary closeout, the EDS units,
- 24 CSU, and all support structures and utilities will remain at the PCAPP EDS site but will be placed in
- standby or layaway mode. However, as the EDS units are transportable treatment units, if one is needed
- 26 for temporary deployment, temporary closeout procedures will be followed, the EDS will be deployed to
- 27 the desired location, and will return to PCD once the temporary deployment operation is completed.

28

- 29 Each temporary closeout process will be documented. The Colorado Department of Public Health and
- 30 Environment (CDPHE) Director will be notified when a temporary closeout is to occur. Professional
- 31 Engineer certification will not be necessary for temporary closeout as the EDS and CSU will continue a

I-1-2

32 planned operation.

I-1c(2) RCRA Closure

1

- 3 The EDS and the CSU will undergo RCRA closure when EDS operations are no longer needed at PCD.
- 4 The CDPHE will be notified in writing at least 45 days prior to the date the EDS units and the CSU are
- 5 expected to begin RCRA closure. Decontamination (as necessary) will be conducted according to the
- 6 Project Manager for Non-Stockpile Chemical Materiel (PMNSCM) Policy (October 2010) pertaining to
- 7 chemical agent decontamination of tools, supplies, equipment, and facilities. This policy establishes
- 8 standards and procedures for identifying and decontaminating equipment on completing a chemical agent
- 9 destruction mission and is based on Department of the Army Pamphlet (DA Pam) 385-61 (2012) and the
- 10 DoD 60055.9-STD (current version) regarding chemical agents.

11

- 12 The Environmental Enclosures will be decontaminated (if necessary), then may be reused to support
- projects located elsewhere at other U.S. Department of Defense (DoD) facilities or may be discarded if
- repairs or relocation are not cost effective.

15 16

I-1c(3) Actions Applicable to Temporary Closeout and RCRA Closure Activities

17

- Personnel involved in PCAPP EDS closeout and closure activities will be trained in applicable health and
- safety procedures, use of decontamination and sampling equipment, proper decontamination techniques,
- and sample collection, handling, and management. Personnel will use appropriate personal protective
- 21 clothing and equipment as determined by the site-specific Health and Safety Plan. In general,
- 22 DA Pam 385-61, Toxic Chemical Agent Safety Standards, will be followed, as well as Occupational
- 23 Safety and Health Administration (OSHA) safety standards.

24

- Wastes generated during temporary closeout and RCRA closure activities will be properly characterized
- as described in the Waste Analysis Plan in Section C-2 of this permit modification and will be
- 27 containerized and managed in a less than 90-day hazardous waste storage area, pending shipment to a
- permitted treatment, storage, and disposal facility (TSDF). The types of wastes expected to be generated
- 29 from temporary closeout and RCRA closure activities include decontamination/cleaning solutions;
- rinsewaters; used personal protective equipment (PPE); wipes, rags, and other absorbent and cleaning
- 31 materials used in decontamination or cleaning activities.

- 33 For temporary or RCRA closure, once the CSU and EDS units are deemed clean to acceptable levels, the
- units can be placed in layaway mode or demobilized for reuse (EDS units only). If an EDS unit is slated

Date: October 2013 Revision No. 0

for temporary use elsewhere, it will be demobilized from the PCAPP EDS site then brought back when 1

the temporary assignment is completed.

3

6

2

4 If during temporary closeout or demobilization, process areas or equipment are discovered that may be

- contaminated, these areas or equipment will be decontaminated and decontamination verified. When 5
 - chemical agent has been processed, headspace monitoring and rinsewater² sampling results will be
- compared to the acceptable levels listed in **Table I-1-1**. If results do not meet the acceptable levels, then 7
- 8 decontamination will be repeated until the levels are met.

9

- 10 An Environmental Enclosure Air Filtration System (AFS) and the CSU Igloo Containment System will
- 11 remain operating and chemical agent monitoring conducted until headspace monitoring sample results are
- received and results show that the acceptable levels are met. During a closeout, the Environmental 12
- Enclosure AFS sulfur-impregnated carbon filters will be turned off, and if necessary, the first carbon filter 13
- 14 bank will be removed and managed as hazardous waste.

15 16

I-1d **Closure Performance Standard** [6 CCR 1007-3 § 100.41(a)(13) and § 264.111]

17

- Per 6 Code of Colorado Regulations (CCR) 1007-3 Part 264 Subpart G, Closure and Post-Closure (that 18
- 19 incorporates by reference 40 CFR 264.111), an owner or operator must close a permitted hazardous waste
- 20 management unit in a manner that minimizes the need for further maintenance and controls, minimizes, or
- 21 eliminates to the extent necessary to protect human health and the environment, post-closure escape of
- 22 hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste
- 23 decomposition products to the groundwater, surface waters, or the atmosphere.

- 25 The EDS treatment/destruction and CSU waste storage operations will be performed in a manner
- 26 designed to control and eliminate escape of hazardous waste and hazardous constituents into the
- 27 environment. Engineering and administrative controls will be in place for both the EDS units and the
- CSU that contribute to controlling, minimizing, or eliminating the possibility of contamination to 28
- 29 groundwater, surface waters, or the atmosphere from EDS and CSU operations. These controls are
- 30 described in the following text.

Rinsewater analysis will be conducted for mustard agent only; HD/HT will be measured as H.

All tables are located at the end of this section.

1	<u>EDS</u>		
2			
3	The EDS units include the trailer/skid that holds the Containment Vessel, waste handling subsystems, and		
4	associated equipment for each unit. Section D-11 of this permit modification provides a detailed		
5	description of the EDS design and operation. EDS operations will take place inside an Environmental		
6	Enclosure comprised of a ceiling, sides, and impermeable flooring that will protect the hazardous waste		
7	management unit from precipitation and run-on as well as prevent the creation of any contaminated		
8	runoff.		
9			
10	Each EDS trailer/skid secondary containment pan is capable of containing the contents of a full		
11	Containment Vessel; secondary containment for liquid waste containers and chemical reagents is		
12	provided; an enclosure AFS with sulfur-impregnated carbon filtration will be used; and trained explosive		
13	handling and chemical operators; approved work procedures; use of appropriate PPE; and prohibition of		
14	open flames, cutting, welding, smoking, and radiant heat inside the Environmental Enclosure will be		
15	employed. Additionally, at the conclusion of every EDS treatment operation, procedures are followed for		
16	servicing, cleaning, disassembly, and decontaminating (if necessary) EDS components to acceptable		
17	levels so that the EDS may be reused for subsequent or future operations at the same location or		
18	mobilized to a new location.		
19			
20	These procedures involve the following:		
21			
22	 Cleaning/decontaminating the Containment Vessel and Containment Vessel door 		
23			
24	 Disassembling components of the Containment Vessel and Containment Vessel door, 		
25	decontaminating components (O-ring, Grayloc® seal, protector plate, blast shield, and		
26	covers, etc.), and manually cleaning/decontaminating the components		
27			
28	• Scrubbing the interior of the Containment Vessel		
29			
30	 Following all cleaning/decontamination with clean water rinses 		
31			
32	• Clearing sample and drain lines on the Containment Vessel door		

1	•	Cleaning EDS trailer/skid contact surfaces (electrical panels, debris pan, spill	
2		containment trays, railings, and other operator-contacted surfaces)	
3			
4	•	Cleaning the EDS trailer/skid secondary containment pan and platform secondary	
5		containment pan	
6			
7	•	Collecting all cleaning solutions and rinsewaters and managing them appropriately, based	
8		on sampling and analysis results according to the Waste Analysis Plan	
9			
10	•	Collecting components/parts that are not reused (e.g., O-ring, Grayloc seal) and placing	
11		the items in waste containers for disposal	
12			
13	•	Performing headspace monitoring and/or other means (such as rinsate sampling) when	
14		chemical agent has been processed to confirm cleaning/decontamination to acceptable	
15		levels for equipment reuse	
16			
17	•	Reassembling EDS components, such as the Containment Vessel door, and securing the	
18		EDS and associated equipment for demobilization or standby mode.	
19			
20	<u>CSU</u>		
21			
22	The CSU is an	existing earth-covered storage igloo specifically designed to store energetic munitions. It	
23	is comprised o	f concrete with flooring, walls, and ceiling. Section D-1 of this permit modification	
24	provides a desc	cription of the CSU design and operation. Historically, the CSU never stored chemical	
25	munitions or hazardous waste. Prior to storing any hazardous waste items pending EDS treatment, the		
26	CSU will be cleaned and upgraded.		
27			
28	A passive carb	on filtration system known as the Igloo Containment System will be attached to the CSU to	
29	collect any age	ent vapors if emitted. The CSU flooring will be sealed with a polyurea coating for added	
30	protection. The overpacked munitions, DOT cylinders, and other miscellaneous items slated for EDS		
31	treatment/destruction will be placed on secondary containment pallets. Trained explosive handling		
32	operators will	perform work under approved work procedures using appropriate PPE. Open flames,	
33	cutting, weldin	g, smoking, and radiant heat will be prohibited inside the storage unit. The wastes that will	
34	be stored in the	e CSU will be known, and no containers will be opened during storage.	

1 For the CSU, closure and decontamination verification will be performed in a phased approach that 2 involves the following: 3 4 A review of storage operations to identify areas or equipment items contaminated with 5 hazardous constituents of concern. This identification will be based on headspace monitoring analytical results, a review of the CSU operating log and inspection records, 6 7 and any known/recorded spill reports as well as a visual inspection to look for cracks, 8 gaps, stains, and discoloration of the CSU floor, which will identify the likelihood of 9 chemical agent or hazardous waste contamination. 10 Performing cleaning/decontamination using suitable cleaning/decontaminant techniques 11 and methods based on the potential contaminants that were identified. Surface 12 13 cleaning/decontamination will be followed by headspace monitoring to verify adequate 14 decontamination. If spills occur in the interior of the CSU and the sealant coating of the floor at the spill area fails, concrete sampling⁴ may be conducted to verify adequate 15 decontamination of the spill area(s). 16 17 18 The EDS units and the CSU will be deemed RCRA closed when EDS operations will no longer occur at 19 PCD and the qualified, independent registered Colorado professional engineer has reviewed the EDS and 20 CSU operating records to: 21 Confirm and evaluate any spills, releases, and cleanup activities 22 23 24 Confirm that the procedures for EDS closeout (servicing, cleaning/decontaminating, and 25 preparing the EDS and associated equipment for subsequent use or demobilization) were 26 followed 27 28 Confirm that the CSU was cleaned/decontaminated with appropriate 29 cleaning/decontaminant methods and techniques, if necessary, and documented

I-1-7

Headspace monitoring will be monitored to the general population limit (GPL) value and concrete sample to 300 parts per billion (ppb) if concrete samples are collected.

1	 Confirm the EDS units and CSU were monitored (via headspace monitoring and/or other 		
2	means such as rinsate or concrete sampling) to verify adequacy of		
3	cleaning/decontamination (if decontamination conducted)		
4			
5	 Confirm monitoring results were documented and that values met the acceptable levels 		
6	established for EDS and CSU reuse and closure		
7			
8	 Confirm that wastes generated from EDS and CSU closeout and closure activities were 		
9	transferred to a less than 90-day hazardous waste storage area pending shipment to an		
10	approved TSDF, or were shipped directly to a TSDF.		
11			
12	Closure of the EDS and CSU hazardous waste management units will be deemed complete when		
13	headspace monitoring (EDS and CSU) and EDS rinsewater sampling results meet the acceptable levels		
14	identified in Table I-1-1 . Headspace monitoring will be conducted for specific periods at or above 70°F		
15	as detailed in Table I-1-2 .		
16			
17	Headspace sampling will consist of using MINICAMS® units or collection and analysis of Depot Area		
18	Air Monitoring System (DAAMS) tubes for HD. Confirmational sampling for chemical agent will be		
19	performed using DAAMS.		
20			
21	Rinsewaters (including any waste waters generated during steam cleaning, if steam cleaning is used for		
22	decontamination) will be sampled and analyzed for mustard agent. Table I-1-3 summarizes the sampling		
23	and analysis methods that will be used to identify contamination and confirm satisfactory		
24	decontamination. Decontamination will be performed until the acceptable levels in Table I-1-1 are met.		
25			
26	I-1e Partial Closure and Final Closure Activities [6 CCR 1007-3 § 100.41(a)(13) and		
27	§ 264.112(b)(3)]		
28			
29	The closure strategy described in this Closure Plan is a final closure activity for the CSU and EDS units at		
30	PCD. However, a partial closure of an EDS unit may take place and will be conducted in the same		
31	manner as previously described. Note however, that a temporary closeout is not a partial closure as the		
32	EDS will continue a planned operation. Treatment of munitions and other items containing chemical		

1	agent in the	EDS units and storage of those wastes in the CSU pending EDS treatment is expected to
2	continue un	til one or more of the following occur:
3		
4	•	Treatment of munitions and other items containing chemical agent is no longer needed
5	•	The EDS is replaced with an alternative technology
6	•	The EDS program ends.
7		
8	No partial c	losure of the CSU is expected to occur.
9		
10	I-1f Ma	ximum Waste Inventory [6 CCR 1007-3 § 100.41(a)(13) and § 264.112(b)(3)]
11		
12	The estimat	ed maximum inventory of wastes that may be present at the EDS units and CSU at any time
13	during opera	ations is provided in Table I-1-4.
14		
15	I-1g Dis	posal or Decontamination of Equipment, Structures, and Soils [6 CCR 1007-3
16	§ 10	00.41(a)(13) and § 264.112(b)(4)]
17		
18	Hazardous v	wastes generated during temporary closeout and RCRA closure activities will be
19	containerize	ed, characterized, and transported to a permitted TSDF. If contaminated, the CSU and EDS
20	will be deco	ontaminated to acceptable levels in Table I-1-1 .
21		
22	Based on th	e PMNSCM Policy for Chemical Agent Decontamination of Tools, Supplies, Equipment, and
23	Facilities (2010) ⁵ when determining potential contamination and path forward for equipment reuse and/or	
24	ultimate dis	position, the following will be considered:
25		
26	a.	Items can be considered clean and available for unrestricted use if the item never
27		contacted liquid chemical agent or chemical agent aerosol and meets one of the following
28		criteria:
29		
30		(1) If in a continuously controlled environment where the environment is
31		documented to never have exceeded the short-term exposure limit (STEL)
32		concentration when the item is present

I-1-9

⁵ This policy does not apply to sulfur-impregnated carbon filters or waste disposal.

1		(2)	If in a continuously-controlled environment where the environment is
2			documented to be greater than the STEL but less than immediately dangerous to
3			life and health (IDLH); and a risk assessment is performed that takes into account
4			factors identified in DA Pam 385-61, Chapter 5-2d.(2).
5			
6	b.	Tools.	, supplies, equipment, and facilities require decontamination or disposal if the items
7		have o	contacted liquid chemical agent; were present in a chemical agent aerosol
8		enviro	onment; were in a continuously-controlled environment and exposed above the
9		IDLH	concentration for any period of time; were in an uncontrolled environment where
10		monit	oring indicated the environment exceeded the STEL concentration (i.e., vapor
11		screen	ning level [VSL]); or were in an uncontrolled environment involving storage, use, or
12		preser	nce of chemical agent and where physical factors (such as discoloration, stains, etc.)
13		indica	te possible exposure to chemical agent. If an item is determined to be
14		contar	minated, a decontamination plan must be developed and carried out. The
15		decon	tamination plan must be tailored to the ultimate disposition of the items and other
16		factor	s as necessary.
17			
18	Cleaning/decor	ıtamina	ant solutions may be general household bleach and/or general detergent or other
19	appropriate dec	ontami	nant and technique referenced in Field Manual (FM) 3-11-5 or identified in
20	Table 1, Altern	ative T	reatment Standards for Hazardous Debris, 6 CCR 1007-3 § 268.45. The U.S.
21	Environmental	Protect	tion Agency (USEPA) recommends and approves the use of the Table 1 alternate
22	treatment standards for RCRA closure purposes. For example, the use of bleach [sodium hypochlorite		
23	(NaOCl)] is a s	tandard	decontamination technique for chemical agent-contaminated non-porous surfaces
24	(metal, glass, plastic, etc.) and is identified as a suitable decontaminant under chemical destruction		
25	technology in 6	CCR 1	1007-3 § 268.45, Table 1. Similarly, detergent and water washing is identified as
26	an appropriate	chemic	al extraction technique and steam cleaning is identified as an appropriate extraction
27	technology in 6	CCR	1007-3 § 268.45.
28			
29	The decontamin	nation/o	cleaning solutions are generally applied manually through use of a spray device,
30	high pressure w	ash or	other mechanical means or by wiping down with cloth or paper towels and wipes or
31	other cleaning a	apparat	us such as a scrub brush.
32			
33	Soil removal sh	ould no	ot be necessary during closure because any incidents involving chemical agent or
34	hazardous wast	e releas	se during the operational life will have been managed under the PCAPP EDS site

Contingency Plan (see Section G of this permit modification) and will be known.

1	I-1g(1) Closure of Containers [6 CCR 1007-3 § 100.41(a)(13) and § 264.114]		
2			
3	One permitted container storage unit, the CSU, will be located at the PCAPP EDS site. All wastes will		
4	have been removed from the CSU prior to initiating closure. The unit will be cleaned of loose dirt and		
5	debris using a vacuum device and the dirt/debris collected and placed in waste containers and		
6	characterized. A visual inspection will be conducted and areas showing gaps, cracks, stains, and		
7	discoloration on the floor will be noted. The CSU will then be headspace monitored.		
8			
9	If contamination of the CSU is suspected or known, the interior walls and flooring where contamination is		
10	suspected or present will be cleaned/decontaminated using an appropriate cleaning/decontaminant and		
11	method. Headspace monitoring for mustard agent will be conducted; concrete sampling will only be		
12	conducted if operation record review and the visual inspection identify potential contamination; sampling		
13	results will be compared to the acceptable levels. Decontamination will be conducted until headspace		
14	monitoring and concrete sampling (if conducted) results meet the acceptable levels presented in		
15	Table I-1-1 . The CSU will be deemed clean closed when headspace monitoring and concrete sample (if		
16	conducted) results meet the acceptable levels. The used decontamination solutions and concrete will be		
17	collected and placed in containers, characterized, and stored pending shipment to a permitted TSDF.		
18			
19	I-1g(2) Closure of Tanks [6 CCR 1007-3 § 100.41(a)(13) and § 264.197]		
20			
21	There will be no RCRA-permitted hazardous waste tanks at the PCAPP EDS site. Therefore, the		
22	requirements of this section are not applicable.		
23			
24	I-1g(3) Closure of Waste Piles [6 CCR 1007-3 § 100.41(a)(13) and § 264.258]		
25			
26	The hazardous waste management units addressed in this permit modification are not waste piles.		
27	Therefore, the requirements of this section are not applicable.		
28			
29	I-1g(4) Closure of Surface Impoundments via Waste Removal [6 CCR 1007-3 § 100.41(a)(13) and		
30	§ 264.228]		
31			
32	The hazardous waste management units addressed in this permit modification are not surface		
33	impoundments. Therefore, the requirements of this section are not applicable.		

1	I-1g(5)	Closure of Incinerators, Boilers, and Industrial Furnaces [6 CCR 1007-3 § 100.41(a)(13)	
2		and § 264.351]	
3			
4	The haza	ardous waste management units addressed in this permit modification are not incinerators.	
5	Therefor	re, the requirements of this section are not applicable.	
6			
7	I-1g(6)	Closure of Land Treatment Facilities [6 CCR 1007-3 § 100.41(a)(13) and § 264.280]	
8			
9	The haza	ardous waste management units addressed in this permit modification are not land treatment units.	
10	Therefor	re, the requirements of this section are not applicable.	
11			
12	I-1g(7)	Closure of Miscellaneous Units [6 CCR 1007-3 § 100.41(a)(13) and § 264.601]	
13			
14	The mise	cellaneous treatment units that will be closed are two EDS units. The EDS units and associated	
15	equipme	nt will be serviced, cleaned, disassembled, and decontaminated according to normal procedures	
16	for close	out operations. The EDS units will then be air monitored and the clean water rinsates sampled to	
17	verify ac	dequate decontamination.	
18			
19	Deconta	mination will be conducted using an appropriate bleach, detergent, bleach/detergent mix or water,	
20	followed by a clean water rinse, or steam cleaning (if conducted). The decontamination solution and		
21	clean wa	tter rinses may be applied manually (for example, manual wipe down using cloths, rags, wipes) or	
22	by mechanical means (for example, spray wash, steam clean, flush through, or wet vacuum, depending on		
23	the component). If headspace monitoring and rinsewater analytical results meet the acceptable levels in		
24	Table I-1-1, then the units (or equipment item) will be deemed clean for reuse. Decontamination will be		
25	repeated	until the levels in Table I-1-1 are met.	
26			
27	I-1h	Closure of Landfills [6 CCR 1007-3 § 100.41(a)(13) and § 264.310]	
28			
29	The haza	ardous waste management units addressed in this permit modification are not landfills. Therefore	
30	the requ	irements of this section are not applicable.	
31			
32	I-1i	Closure of Drip Pads [6 CCR 1007-3 § 100.41(a)(13) and § 264.575]	
33			
34	The requ	nirements of this section are not applicable; none of the hazardous waste management units	
35	addressed in this permit modification is a drip pad.		

1	I-1j	Closure of Containment Buildings [6 CCR 1007-3 § 100.41(a)(13) and § 264.1102]		
2				
3	The req	The requirements of this section are not applicable; the hazardous waste management units addressed in		
4	this pen	mit modification are not a containment building.		
5				
6	I-1k	Ancillary Closure Activities [6 CCR 1007-3 § 100.41(a)(13) and § 264 Subpart G]		
7				
8	Closure	of the hazardous waste management units and associated equipment will be completed according		
9	to the pr	rocedures in this section.		
10				
11	I-1k(1)	Decontamination Verification		
12				
13	Where o	contamination is suspected, based on operating history or monitoring, decontamination will be		
14	conduct	ed.		
15				
16	I-1k(1)((a) Sampling to Confirm Decontamination		
17				
18	Followi	ng each treatment operation, the EDS is serviced, disassembled, cleaned, and decontaminated (if		
19	necessar	ry) to acceptable levels for closeout and reuse. Headspace monitoring and/or rinsewater sampling		
20	and ana	lysis are conducted to confirm chemical agent decontamination to acceptable levels. Air samples		
21	for mus	tard agent will be monitored using MINICAMS. Confirmation monitoring will be performed		
22	using D	AAMS. Rinsewaters will be collected in appropriate containers, depending on the volume or		
23	location	of the rinsewater collection. For example, some rinsates may be collected in spill pans and		
24	placed i	n 55-gallon containers. Others may be retained in wet-vac or steam cleaning units. Rinsewater		
25	samples	will be collected as identified in Table I-1-3 and analyzed for the constituents of concern		
26	identifie	ed in Table I-1-1.		
27				
28	When c	hemical agent has been processed, the EDS units and associated equipment will be deemed clean		
29	when he	eadspace monitoring and rinsewater sample results meet the acceptable levels presented in		
30	Table I	-1-1. Table I-1-3 summarizes the sampling and analysis methods that will be used to identify		
31	contami	nation and confirm decontamination.		

Date: October 2013 Revision No. 0

I-1k(1)(b) Structures or Equipment Moni	itoring
---	---------

1	
2	

- 3 All associated equipment or Environmental Enclosures and CSU workspace air will be sampled for
- 4 mustard agent. If necessary, potentially contaminated EDS equipment (either entire piece of equipment
- or component) will be enclosed in plastic and the headspace in the enclosed space will be sampled.
- 6 **Table I-1-2** summarizes the monitoring requirements.

7

- 8 Headspace sampling will be conducted using MINICAMS units or collection and analysis of DAAMS
- 9 tubes for mustard. Confirmational sampling for mustard agent will be performed using DAAMS.
- Headspace monitoring results will be compared to the acceptable levels in **Table I-1-1**. If results do not
- meet the acceptable levels in **Table I-1-1**, confirmatory samples will be collected to determine if
- decontamination is required.

13 14

I-11 Schedule for Closure [6 CCR 1007-3 § 100.41(a)(13) and § 264.112(b)(6)]

15

- Although no specific date has been established for closing the PCAPP EDS site operation, an end date
- will coincide with the end of operations at PCAPP and is expected sometime at the end of 2020.
- **Table I-1-5** presents the typical sequence of activities for a temporary closeout. **Table I-1-6** presents the
- 19 RCRA closure sequence for an EDS unit and **Table I-1-7** is the closure schedule and activity sequence
- 20 for the CSU. As previously indicated, hazardous wastes generated from normal EDS
- 21 cleaning/decontamination and closeout procedures would have been removed at the end of each EDS
- treatment operation, and therefore, would not be present at time of closure.

2324

I-1m Extension for Closure Time [6 CCR 1007-3 § 100.41(a)(13) and § 264.113(a)(1)]

2526

- Closure of each hazardous waste management unit is not expected to exceed the 180 days allowed. No
- 27 extension is requested at this time.

2829

- I-1n Certification of Closure and Submission of Draft Environmental Covenant [6 CCR 1007-3
- 30 § 100.41(a)(13) and § 264.115]

- Within 60 days of completing closure activities, the U.S. Army will submit a certification, signed by the
- 33 owner/operator and an independent registered professional engineer, that the hazardous waste
- management units have been closed in accordance with the approved closure plan and all applicable

Revision No. 0

regulations. Documentation of closure activities will be maintained by the certifying independent

- 2 registered professional engineer and the Army and will be submitted to CDPHE upon request.
- 4 A draft environmental covenant is not required as the hazardous waste management units addressed in
- 5 this closure plan are not disposal units.

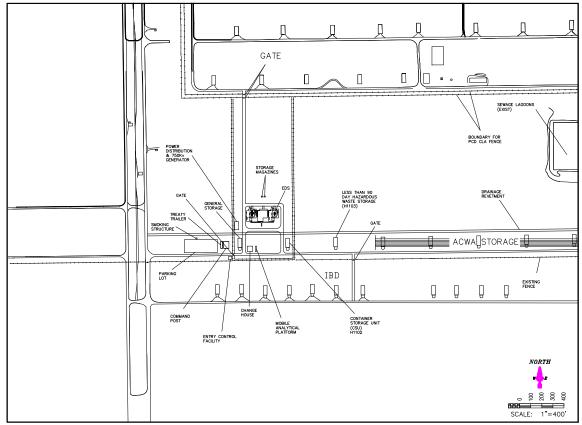
6

3

7 **I-10 Survey Plat** [6 CCR 1007-3 § 100.41(a)(13) and § 264.116]

8

9 Since no disposal units will be at the PCAPP EDS site, the requirements of this section are not applicable.



Pueblo Site Plan Rev 10 Final 10-03-2013.dwg

PCAPP EDS

Figure I-1-1. PCAPP EDS Site Layout

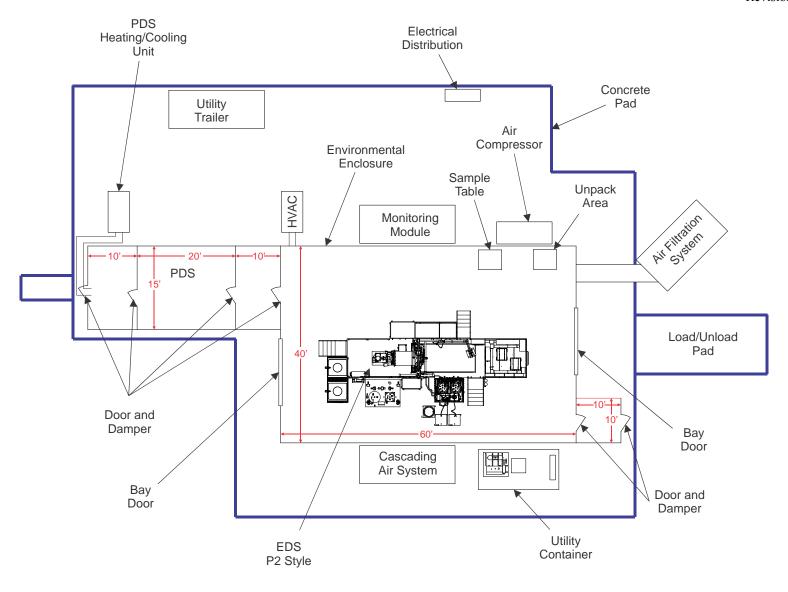


Figure I-1-2. Example of an EDS Inside Environmental Enclosure

I-1-17 PCAPPEDSR0.I-1

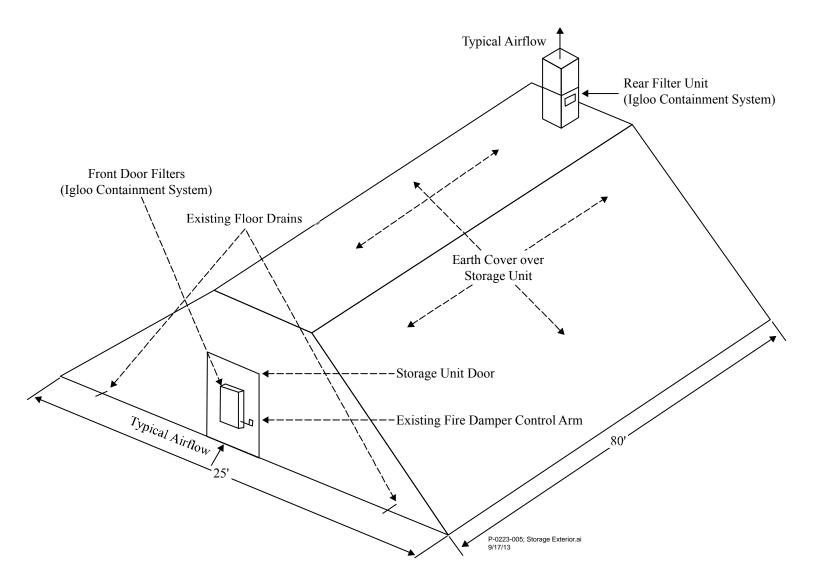


Figure I-1-3. CSU

PCAPPEDSR0.I-1 I-1-18

Revision No. 0

Table I-1-1. Acceptable Levels for Decontamination and Reuse^{a,b,c}

1
2

Media and Parameters	Level ^c
Air Samples Mustard Agent (HD/HT)	
EDS Units: Temporary and RCRA Closure CSU: Temporary Closeout CSU: RCRA Closure	$< 0.003 (3 \times 10^{-3}) \text{ mg/m}^{3 \text{ a,b}}$ $< 0.003 (3 \times 10^{-3}) \text{ mg/m}^{3 \text{ a,b}}$ $< 0.00002 \text{ mg/m}^{3 \text{a,b}}$
Rinsewaters ^d	
EDS Units: Mustard Agent (HD/HT)	< 50 mg/L
Concrete ^e Chip Samples (if conducted)	
CSU: Mustard Agent (HD/HT)	\leq 300 ppb (0.3 mg/kg)

3 4 5 6

7

8

9

13

14

15

16

Notes:

- For release to chemical agent workers and use in chemical agent facilities or operations, the item will be decontaminated and/or monitored to less than the short-term exposure limit (STEL) concentration. For the CSU at RCRA closure, the value listed relates to the general population limit (GPL). Levels presented are from DA Pam 385-61, *Toxic Chemical Agent Safety Standards*, 13 November 2012.
- Mustard agents HD/HT are measured as H.
- Headspace monitoring levels are considered exceeded when concentration results from at least two cycles of MINICAMS® or Depot Area Air Monitoring System (DAAMS) sampling are above the acceptable level.
 - Acceptable level value is based on potable water rinsate.
 - If operation records review and visual inspection indicate evidence of stains, discoloration, cracks, gaps, and known spills/releases inside the CSU, then concrete chip samples will be collected. Acceptable level value is based on Center for Health Promotion and Preventive Medicine (CHPPM) (1999 and 2007) derived mustard agent health based environmental screening levels (HBESLs) for industrial land use end state.

- 19 **CSU** Container Storage Unit 20 **EDS Explosive Destruction System** distilled sulfur mustard 21 HD = 22 mustard-T mixture HT 23 milligram per kilogram mg/kg = 24 milligram per liter mg/L =
- 25 mg/m³ = milligram per cubic meter
- 26 ppb = parts per billion
- 27 RCRA = Resource Conservation and Recovery Act

Table I-1-2. Headspace Monitoring Sampling Requirements

1	
<u> </u>	

Item	Headspace Monitoring Sampling Conditions
EDS Equipment	Isolate potentially contaminated equipment by enclosing in plastic and allowing headspace in the enclosure to equal equilibrium for no less than 2 hours at or above 70°F before monitoring.
Fixed Equipment	No less than 2 hours at or above 70°F before monitoring
Portable Equipment	No less than 2 hours at or above 70°F before monitoring
CSU Interior Space	No less than 2 hours at or above 70°F before monitoring

Notes:

After the conditions listed in this table are established, MINICAMS® or Depot Area Air Monitoring System (DAAMS) samples will be collected and analyzed. If results meet acceptable levels in **Table I-1-1**, the structure or equipment is considered clean.

Container Storage Unit

Explosive Destruction System 11 EDS

Table I-1-3. Summary of Confirmatory Sampling and Analysis Methods

Sample Source	No. of Samples	Sampling Method/ Equipment	Analytical Parameters	Sample Container	Sample Collection Preservative	Analytical Method ^a	Sample Holding Time
Headspace Sample of EDS Equipment and CSU	One sampling cycle for each structure, equipment, or space	Vapor monitor using MINICAMS® or DAAMS ^b	Mustard Agent H ^c	N/A	N/A	U.S. Army approved methods	N/A
Rinsewaters	Two	Grab/COLIWASA, bottle, drum thief	Mustard Agent H ^c	Stainless Steel or Glass jar or bottle with a Teflon-lined cap	4°C	U.S. Army approved methods	30 days
Concrete Chip ^d Samples of CSU flooring	Will be based on size of storage area sample grid created	Bias random sampling	H ^c	Stainless Steel, Polyethylene, or Glass	4°C	U.S. Army approved methods	30 days

Notes:

5 6

3 4

8

9

10 11

12 COLIWASA = composite liquid waste sampler

13 CSU = Container Storage Unit

14 DAAMS = Depot Area Air Monitoring System 15 EDS = Explosive Destruction System

16 H = Levinstein mustard 17 N/A = not applicable

I-1-21 PCAPPEDSR0.I-1

^a PCAPP EDS onsite Mobile Analytical Platform will perform chemical agent analysis.

DAAMS will be used to confirm MINICAMS results if MINICAMS alarm for chemical agent.

^c Distilled sulfur mustard (HD) and mustard-T mixture (HT) will be measured as H.

If operation records review and visual inspection indicate evidence of stains, discoloration, cracks, gaps, and known spills/releases inside the CSU, then concrete chip samples will be collected.

1 2

10

14

15

Table I-1-4. Maximum Inventory of Wastes

			Waste Quantity	
Location	Media	EDS P2R	EDS P2A	CSU
EDS ^a				
EDS Containment Vessel	Liquid	≈ 160 gallons	≈ 160 gallons	N/A
Neutralent Waste Tote ^c	Liquid	350 gallons	350 gallons	N/A
Rinsewater Waste Tote ^c	Liquid	350 gallons	350 gallons	N/A
Intermediate Tank ^d	Liquid	125 gallons	125 gallons	
Intermediate Tank Secondary Containment	Liquid	≈ 136 gallons	≈ 136 gallons	
Trailer Secondary Containment Pan	Liquid	≈ 166 gallons	≈ 166 gallons	N/A
Reagent Supply Subsystem Secondary Containment Pan	Liquid	≈ 107 gallons	N/A	N/A
CSU ^b		<u>.</u>		•
Containment Pan Plus Containers	Liquid	N/A	N/A	≈ 1,801 gallons
Total		≈ 1,394 gallons	1,287 gallons	≈ 1,801 gallons

Notes:

a Values based on two EDS Phase 2 Units for conservative analysis.

Values based on storage limit of 300 munitions total at 339 gallons; plus 34 pallets at 43 gallons per pallet in CSU.

^c For conservative analysis, 350-gallon totes are described. Other containers may be used.

Intermediate Tank is a less than 90-day storage tank that will be used to hold hot rinsewaters.

11 CSU = Container Storage Unit

12 EDS = Explosive Destruction System 13 N/A = not applicable

N/A = not applicable P2A = Phase 2 Unit A P2R = Phase 2 Unit R

PCAPPEDSR0.I-1 I-1-22

Revision No. 0

1 2

Table I-1-5. Temporary EDS and CSU Closeout Sequence^a

	Activity	Day Completed
Ini	tiate Closeout Activities	Day 0
•	Review operating records and confirm and evaluate any spills, releases, cleanup activities noted	Day 1 to 4
•	For EDS, perform procedures for servicing, cleaning/decontaminating, and preparing the EDS and associated equipment for subsequent use or demobilization; collect rinsate samples	
•	Clean CSU. For EDS and CSU, review/collect headspace monitoring samples/analyses to verify adequate cleaning/decontamination	
•	Evaluate chemical agent analysis results and document	
•	Confirm any wastes generated during closeout activities were properly containerized and transferred to the PCAPP EDS site less than 90-day hazardous waste storage area pending shipment to a TSDF	
Co	nfirm and document that temporary EDS Closeout Activities listed above are completed	Day 5 to 6
Note	es:	
a	One EDS unit; day completed is an estimate	
CSU EDS TSE	Explosive Destruction System	

I-1-23

Table I-1-6. EDS RCRA Closure Sequences^a

1	
2	

Activity	Day Completed	
Initiate Closure Activities	Day 0	
PE will review operating records to:	Day 1 to 5	
 Confirm and evaluate any spills, releases, cleanup activities noted 		
 Confirm that the EDS procedures for closeout (servicing, cleaning/decontaminating and preparing the EDS and associated equipment for subsequent reuse or demobilization) were followed 		
 Confirm the EDS was monitored to verify adequacy of cleaning/decontamination 		
 Confirm monitoring results were documented and that values met the acceptable levels established for equipment reuse 		
 Confirm that wastes generated from closeout operations were transferred to a less than 90-day hazardous waste storage area pending shipment to a TSDF or were shipped directly offsite to a TSDF 		
Prepare to remove EDS from Environmental Enclosure	Day 6 to 8	
Ship all wastes generated from closure to a permitted hazardous waste TSDF	Day 21 to 30	
Complete all closure activities	Day 30 to 60	
Submit closure certification to the CDPHE	60 days after completion of closure	

3 4 5

Each EDS unit; day completed is an estimate

CDPHE

Colorado Department of Public Health and Environment Explosive Destruction System Professional Engineer (Colorado) treatment, storage, and disposal facility

EDS 10 PE = 11 **TSDF**

Revision No. 0

1 2

Table I-1-7. CSU Closure

Activity	Day Completed	
Initiate Closure Activities	Day 0 Day 1 to 10	
PE will:		
 Confirm and evaluate any spills, releases, cleanup activities noted 		
 Confirm that cleaning/decontaminating was conducted and documented 		
 Confirm the CSU was monitored to verify adequacy of cleaning/decontamination 		
 Confirm monitoring results were documented and that values met the acceptable levels established 		
 Confirm that wastes generated from closeout operations were transferred to a less than 90-day hazardous waste storage area pending shipment to a TSDF or were shipped directly offsite to a TSDF 	Day 11 to 12	
Ship all wastes generated from closure to a permitted hazardous waste TSDF	Day 13 to 30	
Submit closure certification to the CDPHE	60 days after completion of closure	

Colorado Department of Public Health and Environment Container Storage Unit Professional Engineer treatment, storage, and disposal facility **CDPHE**

3 4 5 6 7 8 9 = CSU = PE

TSDF

Date: October 2013 Revision No. 0

1

(This page intentionally left blank.)

1	I-2	POST-CLOSURE PLAN [6 CCR 1007-3 § 100.41(a)(13) and 100.41(b)(3)(10)(i)(B);
2		§ 264.112, 264.118, 264.178, 264.197, 264.228(b) and (c)(1)(ii), 264.258(b) and (c)(1)(ii),
3		264.310(b), 264.351, and 264.603]
4		
5	A pos	t-closure plan is not applicable as the hazardous waste management units addressed in this permit
6	modif	fication are not land disposal units.
7		
8	I-3	POST-CLOSURE NOTICES [6 CCR 1007-3 § 100.41(a)(14) and § 264.119]
9		
10	This 1	requirement only applies to closed hazardous waste disposal facilities, and therefore, is not
11	applic	eable to this RCRA permit modification.
12		
13	I-4	CLOSURE COST ESTIMATE [6 CCR 1007-3 § 100.41(a)(15); § 266.12 and 266.14]
14		
15	A clo	sure cost estimate is not required for this RCRA permit modification. The Colorado Hazardous
16	Waste	e Regulation 6 CCR 1007-3 § 266.10(c) exempts the State of Colorado and the Federal government
17	from	the financial requirements of 6 CCR 1007-3 § 266 Subpart A, Financial Assurance.
18		
19	I-5	FINANCIAL ASSURANCE MECHANISM FOR CLOSURE [6 CCR 1007-3 § 100.41(a)(15)
20		and § 266.14]
21		
22	No fi	nancial assurance mechanism is required for the closure of the hazardous waste management units
23	addre	ssed in this permit modification. The Colorado Hazardous Waste Regulation 6 CCR 1007-3
24	§ 266	.10(c) exempts the State of Colorado and the Federal government from the financial requirements of
25	6 CC	R 1007-3 § 266 Subpart A, Financial Assurance.
26		
27	I-6	POST-CLOSURE COST ESTIMATE [6 CCR 1007-3 § 100.41(a)(16); § 266.12, 266.13,
28		and 266.14]
29		
30	A pos	t-closure cost estimate is not required for this RCRA permit modification. The Colorado Hazardous
31	Waste	e Regulation 6 CCR 1007-3 § 266.10(c) exempts the State of Colorado and the Federal government
32	from	the financial requirements of 6 CCR 1007-3 § 266 Subpart A, Financial Assurance. Moreover, the
33	PCAI	PP EDS site will not need to perform post-closure activities because hazardous wastes or hazardous
34	waste	constituents will not remain at the PCAPP EDS site after closure.

1	I-7 FINANCIAL ASSURANCE MECHANISM FOR POST-CLOSURE CARE [6 CCR 1007-3
2	§ 100.41(a)(16); § 266.13 and 266.14]
3	
4	Post-closure financial assurance is not required for this RCRA permit modification. The Colorado
5	Hazardous Waste Regulation 6 CCR 1007-3 § 266.10(c) exempts the State of Colorado and the Federal
6	government from the financial requirements of 6 CCR 1007-3 § 266 Subpart A, Financial Assurance.
7	Moreover, the PCAPP EDS site will not need to perform post-closure activities because hazardous waste
8	or hazardous waste constituents will not remain at the PCAPP EDS site after closure.
9	
10	I-8 LIABILITY REQUIREMENTS [6 CCR 1007-3 § 100.41(a)(17) and § 266.16]
11	
12	This section is not applicable. The Colorado Hazardous Waste Regulation 6 CCR 1007-3 § 266.10(c)
13	exempts the State of Colorado and the Federal government from the financial requirements of
14	6 CCR 1007-3 § 266 Subpart A, Financial Assurance.